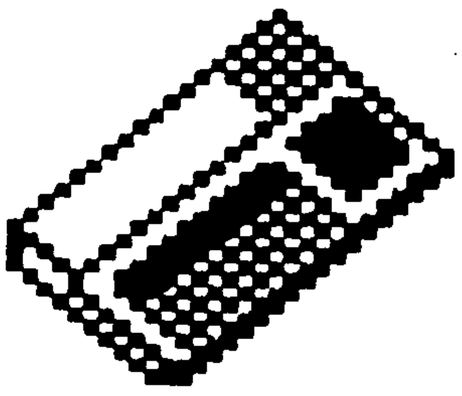

HUG

HOUSTON USERS' GROUP

PROP. of HUG
SET "A"
c/o R.Lumpkin
Houston Texas
713-469-5089

OCTOBER
1985

HUG TIBBS - (713) 475-8909
24-hour BULLETIN BOARD

MEETING SCHEDULE
FIRST SUNDAY OF EVERY MUNTH
(2nd Sunday if 1st Sunday
is on a holiday weekend)

****

THE NEXT MEETING IS

SUNDAY, OCTOBER 6, 1985 2:00 P.M.

St. John's School - 2401 Clairemont

****

IN THIS ISSUE

BALLOT SUMMARY
ASSEMBLER TUTORIAL
PRESIDENT'S REPORT
LIBRARY UPDATE
TI-WRITER TIP

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THIS NEWSLETTER IS PUBLISHED MONTHLY BY THE HOUSTON USERS' GROUP. ANY OPINIONS OR ENDORSEMENTS ARE THOSE OF THE AUTHOR. AND MAY NOT NECESSARILY REFLECT THE OFFICIAL OPINION OF 'HUG'. PERMISSION TO REPRINT GRANTED TO OTHER USER GROUPS. SUBSCRIPTION IS FREE WITH MEMBERSHIP.

PRESIDENT'S COMMENTS

I would like to start this article by explaining to the members present at our last session that I was not being discourteous to anyone when I walked out during the "discussion". The fact is that I was forced to do so for medical reasons. This past year I have been treated twice for ulcers and have about got them under control again. The doctor has told me not to get upset, else I may spend my vacation in the hospital. So when comments started being made that were, in my opinion, misleading, fictitious, and again degrading of our Board of Directors, that was the time to walk out. I have put up with these type comments for several months and refuse to let such comments be directed toward me. And from what I hear that went on for the next half hour, for my stomach's sake, I'm glad I was not a part of it.

I feel it is unnecessary to openly respond to the accusations and comments made during this "session". I believe most of the members know the Board well enough to judge for themselves. I can assure you that the majority of the Board of Directors has acted only in the best interest of HUG.

Now on to other items. It has been brought to my attention that several members still want to discuss our constitution, so we are setting aside time on the agenda of our next meeting for this. I have read the comments on the ballots and some of them are worth considering. I, personally, am going to suggest several changes at our next Business Meeting, which will clarify some points brought up. Our discussion time will be after the program and I will present a summary of the comments made. Then anyone who wants to speak may do so, in an orderly manner, but "heated arguments" will not be tolerated and those involved will be asked to leave. We have had too many "heated debates" in the past, but no more!

I would like to take the space to clarify some of the more common points brought up. The reason the balloting was handled with mailout ballots was to give every member a chance to vote. We have members that live out-of-state, yet they should be entitled to voice their opinion. The reason this was not brought to the membership was that the membership did not have a business meeting last month, yet decisions still had to be made. Opinions were sought and I, PERSONALLY, made the decision to give everyone a chance to vote. I based this on the fact that U.S. elections have absentee voting. You might ask, can the President do this. The answer is simple. In the past we have had no rules to follow. There was no policy to cover this.

Another point raised was the "anonymous committee". I appointed the committee and sub-committees at the July 25 Board meeting. There was no business meeting in August to announce this committee. We were not keeping it a secret. Anyone who asked was informed as to who were on these committees. And the point about no formal discussion was decided because we had had so many complaints about the business sessions taking so long. Just think how it would be. In the past we have discussed an issue 20 minutes then it passed unanimously. Thirty-five sections of the constitution with some opposition. I would have still been at the meeting instead of writing this article. [I am doing this Monday.]

Don't misunderstand me. We did have many very favorable comments about the way the balloting was handled. And a 76% favorable vote on all Articles. We do have our constitution now, so let's all get behind it. If there are changes you would like to see made, ask to be placed on the agenda at a business session for that purpose. But for now, let's all support it, as is. I have committed myself to follow our rules, though some have already publicly showed they will not recognize and support it. If everyone would support the decision made, I feel we can get back to harmony and serving our purpose.

Bill W. Knecht

CONSTITUTION BALLOT RESULTS

The proposed Constitution Ballot which was mailed to you a month ago, was tabulated and all Articles were approved by at least a three-fourths majority of the votes cast. The actual count was as follows:

	FOR	AGAINST	OBSTAIN	% PASSAGE
Article I	39	5	2	84.8
Article II	43	3	0	94.5
Article III	42	4	0	91.3
Article IV	36	10	0	78.3
Article V	35	11	0	76.0
Article VI	39	6	1	84.8
Article VII	40	6	0	87.0
Article VIII	39	6	1	84.8
Article IX	40	6	0	87.0
Article X	39	2	5	84.8

Some of these numbers are different from those announce on September 8, due to a requested recount of the ballots. The numbers listed above are the correct ones.

ARTICLE VII
MEETINGS OF THE MEMBERSHIP

SECTION 1. An annual meeting of the members of the Association shall be held in the first Sunday of December (or the next Sunday should the first fall on a holiday weekend) at a place in the County of Harris, State of Texas, to be designated by the Board of Directors.
SECTION 2. At the annual meeting a report of the past year's activities and or projects for the future shall be made by the Board and by such others as the Board may invite to report. A financial report shall be made by the Treasurer. Following the reports, the membership will adhere to the following agenda: Ratification of the Acts of the Board of Directors for the past year, election of new officers, and election of life members, establishing the annual dues, and any contengency business.
SECTION 3. VOTING. Each member entitled to one vote, in person or by absentee vote. Upon written request, the Secretary will supply absentee ballots to any member, to be marked then returned in a sealed envelope bearing the member's name and date the vote is to be cast. The ballot shall be opened and cast by the President on the date of the vote. All elections for directors shall be decided by plurality vote; all other questions shall be decided by majority vote.
SECTION 4. QUORUM. Except as otherwise required by law, the members present, in person or by absentee vote, shall constitute a quorum at the annual or any special meeting of the members. A majority of the officers is considered a quorum at the Board of Directors meetings.
SECTION 5. SPECIAL MEETINGS. Special meetings of the members for any purpose, may be called by the President and shall be called by the President or Secretary at the request in writing of a majority of the directors, or upon requisition by a recall petition. Written notice, stating the place, date, time of the meeting, and the general nature of the business to be considered, shall be given to each member entitled to vote at his address as it appears on the records of the Association, not less than ten nor more than fifty days before the date of the meeting. No business other than that stated in the notice shall be transacted at any meeting.

ARTICLE VIII
NOTICE AND WAIVER OF NOTICE

SECTION 1. NOTICE. Whenever any notice is required by these Articles to be given, personal notice is not meant, and any notice so required shall be deemed to be sufficient if given by depositing the same in the United States mail, postage prepaid, addressed to the person entitled thereto at his address as it appears on the records of the Association., and such notice shall be deemed to have been given on the day of such mailing.
SECTION 2. WAIVER OF NOTICE. Whenever any notice is required to be given under the provisions of the Articles of Association, a waiver in writing signed by the person entitled to said notice, whether before or after time stated therein, shall be deemed proper notice.

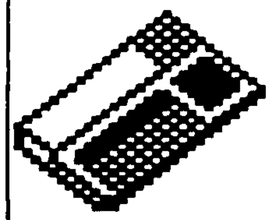
ARTICLE II
AMENDMENTS

These Articles can be amended by a majority vote of the membership present at a special or annual meeting.

ARTICLE I
DISSOLUTION

SECTION 1. The Association may dissolve itself upon the majority vote of the membership. Upon dissolution, the Board of Directors will make provision to pay any liabilities of the Association. Any remaining assets will be turned over to either another organization with similar purpose, a successor corporation to this Association, or any entity that qualifies as tax exempt under Section 501(c)(3) of the Internal Revenue Code of 1954 (or the corresponding provision of any future United States Internal Revenue Law).
Distribution of assets upon dissolution to remaining members is expressly prohibited.

-- Adopted September 8, 1985 --



HUG

HOUSTON USERS' GROUP

ARTICLES OF ASSOCIATION

Effective
September 8, 1985

ARTICLES OF ASSOCIATION
of 99/4A Houston Users' Group

ARTICLE I
NAME AND PURPOSES

SECTION 1. We, the undersigned, desiring to form a nonprofit association for the purpose of providing support in the use of the 99/4A home computers and any TMS9900 based microcomputer, and to provide a forum to educate members in the use of said computers, do hereby constitute ourselves a voluntary nonprofit association under the name Houston Users' Group.
SECTION 2. Our principal purpose(s) are all without monetary profit to any officer, director, or member.

ARTICLE II
OFFICE AND DURATION

SECTION 1. The principal office of this Association shall be located in the County of Harris, State of Texas.
SECTION 2. The Association is an ongoing concern with no term of duration.
SECTION 3. The death, removal, or resignation of any member of this Association shall not result in the dissolution of this Association.

ARTICLE III
GENERAL AUTHORITY

SECTION 1. This Association shall have the authority to own, accept, acquire, and dispose of real and personal property, and to obtain, invest, and retain funds, in advancing the puposes stated in Article I above.
SECTION 2. This Association shall have the power to do any lawful acts or things reasonably necessary or desirable for carrying out the Association's purposes, and for protecting the lawful rights and interests of its members in connection therewith.

ARTICLE IV
MEMBERSHIP AND DUES

SECTION 1. There shall be two types of membership, namely:
(A) Life Members who are voted so by a majority of the membership.
(B) Regular Members who have paid initial membership and annual dues.
SECTION 2. Application for membership shall be submitted on Association forms, personally signed, and given to the Membership Vice President.
SECTION 3. All membership applications shall contain a statement that the applicant agrees to abide by the Articles of Association as presently or hereafter duly adopted.
SECTION 4. Membership is available to any interested person without regard to race, color, sex, national origin, or religious beliefs.
SECTION 5. Every member agrees that he will not influence the Association to undertake activities not related to the Purposes stated in Article I. Members are further expected to exhibit common courtesy to other members, not to undertake any action that would bring harm to the association, or represent the Association unless expressly authorized by the Officers.
SECTION 6. The annual dues of each member shall be fixed at the annual business meeting of the Association, payable each year on the anniversary date of the previous payment, but no later than sixty days thereafter.
SECTION 7. Any membership may be revoked by the Board of Directors.

ARTICLE V
DIRECTORS

SECTION 1. The management and government of the affairs of this Association shall be vested in a Board of Directors.
SECTION 2. The Board of Directors shall consist of all elected officers and executive assistants called for in Section 10. Their term of office commences immediately after the annual meeting and terminates with the adjournment of the next annual meeting.
SECTION 3. Within ten days of their election, the officers shall convene their first meeting as a Board of Directors. At that time, they shall decide among themselves the rules, notices, and procedures for their meetings.
SECTION 4. Officers shall be elected from those names that are placed in nomination. The nominations committee (see Article VII) shall nominate one member for each office. Other names may be placed in nomination from membership at the annual meeting. All elections for officers shall be decided by plurality vote.
SECTION 5. The Board of Directors shall make the financial records and the minutes of the Board of Directors available for public inspection at the annual meeting of the membership.
SECTION 6. Power to enter into contracts on behalf of the Association shall be vested in the President. But all such contracts shall be subject to ratification or disapproval by the Board.
SECTION 7. All Officers shall serve without salary for their services as directors, but they may receive reasonable compensation for special work or services rendered in other capacities at the request of the Board of Directors.
SECTION 8. Recall of the Board of Directors. The membership reserves the right to recall the Board of Directors. Recall is accomplished by a petition containing at least 25 percent of the membership's signatures, presented to the President, upon which he will call a special meeting of the membership to vote on the recall. If the Board is recalled, a temporary President will immediately be elected and will preside over an election held that day with nominations made from the floor.
SECTION 9. Removal of an Individual Officer. The Board of Directors may remove an individual officer with or without cause by a majority vote of the officers present at a meeting of the Board. Upon the removal of an officer, the President will nominate a replacement and said replacement will be seated on the Board of Directors upon the ratification of the remaining Board.
SECTION 10. The Officers of this Association shall be:
A. President. The Prisident shall be presiding at all meetings of the membership and Board of Directors at which he is present. The President shall have general supervision and control over the affairs of the Association. He shall execute contracts in behalf of the association. The President shall be an ex-officio member of all committees.
B. Vice Presidents, for the following: Librarian, Newsletter Editor, Special Interest Groups, System Operator, Membership, and Program Director.
C. Treasurer. The Treasurer shall have the custody of the Association funds and securities and shall keep full and accurate account of receipts and disbursements in books belonging to the Association. He shall deposit all moneys and other valuables in the name and to the credit of the Association in such depositories as may be designated by the Board of Directors.
The Treasurer shall disburse the funds of the Association as may be ordered by the Board of Directors, or the President, taking proper vouchers for such disbursements. He shall render to the President and Board of Directors at the regular meetings of the Board of Directors, or whenever they may request it, an account of all his transactions as Treasurer and of the financial condition of the Association. If required by the Board of Directors, he shall give the Association a bond for the faithful discharge of his duties in such amount and with such surety as the Board shall prescribe. The Association will pay the expenses of the bond.
D. Secretary. The Secretary shall maintain the minutes of meetings of the membership and Board of Directors. The Secretary will give, or cause to be given, notice of all meetings of the Membership or Board of Directors as called for by these Articles of Association or upon whose requisition the meeting is called. In the case of his absence, refusal, or neglect to do so, such notice may be given by those upon whose requisition the meeting is called as provided in these Articles of Association.
E. Executive Assistant. The Board may appoint a member as executive assistant if that member's participation is essential to the ongoing activities of the Association. Any executive assistant is a member of the Board.

ARTICLE VI
COMMITTEES

SECTION 1. STANDING COMMITTEES.
A. Nominations Committee. The Nominating Committee shall be appointed by the Board of Directors not less than two months prior to the annual meeting, for the purpose of nominating candidates for office. The committee shall consist of no less than three members.
SECTION 2. SPECIAL COMMITTEES. The President shall appoint any committees deemed necessary by the Board of Directors. The Board may appropriate funding to a committee.
The Board of Directors is expressly forbidden to form an "executive committee". An executive committee is construed as a committee consisting solely of but not all of the officers, and having the powers to act as the full Board.

TI-WRITER TIP

BY

Rogers & Mills

The control of your printer during word processing is a aust. There are several ways to obtain the final results each with a varing degree of success. The book that comes with the TI-WRITER software covers many desirable software control quick methods to achieve a desired print style. An example of a software control is to change from standard print to italics and then back to standard print. Such a software switch is very helpful if you are writing a paper for say a science class. There are other times that a software switch can be used. The possibilities are only limited as to what the author intends to do.

The best way to achieve the software switch is to use the control characters. The Transliterate function of TI-WRITER can sometimes have unpredicable results. It is used by many of the TI-WRITER users and has enjoyed a great deal of press. However, the use of the TRANSLITERATE function should be used when the control characters can not be used. Remember, every time you use the Transliterate function you have decreased the availability of your characters by one! Do this often enough and you will end up with a big mess! The simple solution to the problem is to use the control characters that are at your disposal . To complete the task you will need to have the following printed material at hand : A copy of page 98 of the TI-WRITER manual, a copy of the quick reference list of TI-BASIC (The yellow Z fold cheat sheet you thought had little value.), and a complete manual on your printer. I will explain the use of all three as we continue.

The printer manual is the most important of all the documents that you will use. After a short period of use the commands will become a part of your normal format routine. There is nothing magical about using the control characters. All it takes is a little common sense, some practice, a some careful reading. All you have to do is read the printer manual to obtain the control code for the function that you wish to use , and then use the quick-reference card along with page 98 of the TI-WRITER manual to determine the key strokes to use for the desired control characters.

The method of sending control characters is quite simple. First you look up the function that you desire to use in the function code summery of your printer handbook. The example that I will demonstrate in this article is for the GEMINI 10 printer. It may be different for you printer so check it first before you go any further. The Epson printers are different in some of their controls. In the Gemini 10 handbook, the control code for italics is ESC4. This is the abbreviation of escape 4. The book also refers to the decimal 52. This could be used in a progran that you write. We are not concerned with that technique here but we will draw the relationship between the two.

In a basic program, to send a control code, you must send a set of characters that, in a given sequence, means something to the microprocessor of the printer. The sequence and the characters are the same for either a Basic program and TI-WRITER. However, how the are prepared to be sent is different. In basic you would send them by opening a file in the proper manor either for PIO or RS232 and then print to that file CHR$(27)1 CHR$(52). The first part is the character 27 which is escape or ESC. The second part is the character 4 , which is the signal to set the italics print mode on when preceded by the ESC character and only the ESC character. In TI-WRITER the same effect can be obtained by setting the control cursor on with CTRL U (the cursor becomes an underline) and pressing FCTN R to give you the escape character code on the screen. Then go back to the regular cursor with CTRL U and strike the 4 key. This procedure should produce the following control characters ESC4. The screen will have the following characters on the line you have just entered:

ITALICS '␛4

All of the escape codes can be entered into TI-writer using the same method. Once you get use to the method, you will save yourself a lot of work from not having to use the trans- literate function. You will also benefit by not using up precious characters that could create some difficulty later in your text! The best way to approach this is to take some paper and experiment with the commands. you can print directly from the editor with this method and see your results right away! The control characters will work from the editor without any problem while the trans- literate function must be printed with the Formatter program.

To print just one line while you are experimenting or checking out how a particular line might look in final print, try the following: PF <ENTER> (TO PRINT THE FILE) and then the line number of the line you wish to print followed by a comma, then the line number you wish to stop printing at , then the file to print to. All of this should look like this : ie. 2,2 PIO

This will print only line number 2 to the PIO port of the computer. If you are using a serial printer then you must of course use the serial attributes. (RS232) Have fun and EXPERIMENT! You might learn something!

ASSEMBLY LANGUAGE TUTORAL PART 2
THE BEGINNING
CONTINUED FROM THE SEPTEMBER ISSUE
BY
MACK McCORMIC
DOWNLOADED from COMPUSERVE
CONSUMER INFORMATION SERVICE

Definitions of the terms for the program continued from the previous issue.

WSREG BSS >20

WSREG is the label we decided on for our workspace registers. Could have been any label 1 to 6 characters long. Block Starting Symbol (BSS) sets aside a block of memory, unititialized for use as our workspace. >20 means set aside >20 or 32 bytes (16 words) for R0 to R15.

X DATA 10

Initializes one word of memory to 10 (0010). Hangs the label X on that word.

START LWPI WSREG

Load Workspace Register Immediate (LWPI). Tells the computer to use the 32 bytes of memory for our workspace which begin at WSREG. START is the entry point beginning of our program.

Logic for clear routine.

* CLEAR THE SCREEN

Writes the space character >20 or 32 to the screen 768 times to the screen to clear it. R0 is the counter. R1 contains the space character. We increment R0 to point to the next screen location and check it against 767 to insure we haven't gone too far.

CLR R0

CLears the contents of R0 to zero.

LI R1,>2000

Load Immediate R1 with >2000.

LOOP BLWP @VSBW

Branch and Link Workspace Pointer to the Video Single Byte Write Routine. Brances to the console routine for writing single bytes of information to the screen. R0 always contains the address on the screen to write to. Briefly, there are 768 screen positions 24 rows x 32 Colums=768. This routine writes to VDP RAM in the screen image table (SIT) which is 768 bytes long. Any ASCII value you write to the SIT is displayed on the screen. For example to display the number 3 at row one colum one. R0 would have 0 in it (because we begin counting at 0) and R1 would contain >3300 or 5100 in it. Note the number to be written is in the left byte of the word. The VSBW routine always writes on the Most Significant Byte and disregards the LSB. Here's the easy way to remember it. R0 always contains the address in VDP RAM. R1 always contains the address or data in CPU RAM.

INC R0

INCrement R0 by one. Add one to the contents of R0.

CI R0,767

Compare Immediate whats in R0 to 767.

JLE LOOP

Jump Less than or EQUAL to the label LOOP. IF R0<=767 THEN GOTO LOOP.

Logic for the addition routine. We add the two number together. Because only ASCII numbers may be displayed on the screen we must add >30 to each byte before we display it. In this case our number is 37. We *must place a 3 and 7 on the screen. To do this we divide* 37 by 10 resulting in a quotient of 3 and remainder of 7. We add >30 to the 7 to make ASCII >37. We move this value to the right most byte of our ANS word. We then divide 3 (old quotient) by 10 resulting in 0 quotient and 3 remainder. We again mask up by >30 and shift it left 8 bits (1 byte) in the register. We then move this byte to the left (MSB) of ANS. ANS looks like >3337 when we're finished.

A @Y,@X

Adds two words of memory. Places the sum in the second operand. May also use registers (eg. A R0,R1). Adds whats at the word of memory with label Y to whats at the word of memory label X.

DIV @TEN,R5

DIVides uses two registers. In this case R5 and R6. Divides whats in R6 by whats at TEN or 10. The quotient is placed in R5 and the remainder at R6. That is why we clear R5 before we divide. MOV R6,@ANS

MOV R6,@ANS

MOVe the contents of R6 to whats at the label ANS.

SLA R6,8

Shift Left Arithmetic. Shift the contents of R6 left 8 bits (1 byte) to the MSB. Fills the shifted out positions with 0.

MOVB R6,@ANS

MOVe Byte moves the Most Significant Byte (MSB) or leftmost to the word at ANS without disturbing the LSB of ANS.

Logic for display on the screen routine. R0 contains the position on the screen to display the answer. Found by SCREEN ADDRESS=((ROW-1)*(COLUMN-1). In this case 366. R1 contains the address of the beginning of the data to write to the screen. In this case R1 contains the address of ANS. R2 contains the number of bytes to write beginning at the VDP address in R0 and the CPU address in R1.

JMP $

Instructs the computer to Jump to the current location of the program counter. Same as 100 GOTO 100. This locks up the computer so you may see the result. If you want to see how quickly the computer executes place an * in colum 1 in front of this instruction and reassemble.

Logic for the Return to the Calling Routine. Clears the GPL status byte at >83FC. Much more on this important byte later. Loads the workspace pointer back to the GPL workspace and branches to the routine at >0070. END is a directive to inform the assembler there are no more instructions.

How to Assemble.

If you have the Molesworth book refer to page 42 or page 30-36 in the Editor/Assembler manual. Here's a brief step by step.

1. Select EDITOR/ASSEMBLER from the main menu. Place your editor assembler disk A in drive 1.

2. Select 1-EDIT from the E/A menu.

3. Select 2-EDIT from the EDIT menu.

4. Enter your program just as shown. You may omit any comments if you desire.

5. Press FCTN ESCAPE twice to return to the EDIT title screen.

6. Select 3-SAVE. Answer Y to the VAR/80 prompt. Enter your source file name such as DSK2.SOURCE. If you only have one drive place another disk in drive one first and use DSK1 instead of DSK2.

7. Press FCTN ESCAPE to return to E/A title screen.

8. Select 2-ASSEMBLE. Answer Y to the load assembler question. Insure the E/A disk A is in drive 1.

9. At the SOURCE FILE NAME enter the same file name you used in 6 above. ie. DSK2.SOURCE. press enter.

10. At the OBJECT FILE NAME enter DSK2.OBJECT and press enter.

11. Press enter at the LIST FILE NAME. More on this feature next time.

12. At the OPTIONS prompt enter R. Press enter. R means you used R in front of your register numbers in the source code. You may also enter CLST. C is compressed object code (will not load from X/B loader). L is a source listing if you entered a LIST FILE NAME at the prompt. S prints the symbols and registers used in the program on your source list. T prints the full text string in your source listing. More on these features later. Assembler executing will appear followed by 0000 errors (you hope). Press enter.

13. Press 3-LOAD AND RUN.

14. At the FILE NAME prompt enter your OBJECT file name ie. DSK2.OBJECT. Press enter. Press enter again to get to the PROGRAM NAME prompt.

15. This is the name we DEF in our program in this case START.

16 Your program will execute.

SUMMARY.

I realize this has been long but there has been much to cover to get started. Don't get discouraged. We'll go at this together. I strongly recommend you study these references in your Editor-Assembler manual and experiment on your own. Until next time, "ASSEMBLER EXECUTING".

Page 20-36 Using the Editor-Assembler Cartridge.

Page 39 Sec 3.1 Registers

Page 46-48 Source Statement Format

Page 53 Predefined Symbols. ($)

Page 57-62 Sec 4.1.1, 4.1.4, 4.2, 4.4 Addressing.

Page 80 Add Instruction

```
*****************************************
*            CALL SPRITE                *
*    PROGRAM PLACES A HELICOPTER        *
*    SPRITE IN MOTION BY ENABLING       *
*       INTERRUPTS. PRESS ANY           *
*    KEY TO ALTER MAGNIFICATION         *
*****************************************
       DEF  START
       REF  VMBW,VWTR,KSCAN
HELI   DATA >007F,>0000,>0107,>0E0E   HELICOPTER PATTERN DESCRIPTION
       DATA >1EBE,>FFBF,>0F07,>020F   BLOCK 2
       DATA >00FF,>8080,>C0F8,>04C2        3
       DATA >DACA,>FEFC,>F8E0,>40F8        4
SDATA  DATA >7080,>8008  INITIAL SPRITE DATA
       DATA >D000        >D0 PREVENTS GHOST SPRITES
SPEED  DATA >0A0F,>0000  SPRITE SPEED FOR AUTO MOTION
STATUS EQU  >837C        GPL STATUS BYTE
VDP    DATA >01E0        INITIAL VALUE OF VDP REGISTER 1
MYREG  EQU  >8300        MYREG IN 16 BIT HIGH SPEED AREA OF MEMORY
START  LWPI MYREG
       CLR  @>8375       KEYBOARD DEVICE = 0. SCAN ALL.
       MOV  @VDP,R6
       LI   R0,>0400     LOAD  (BASE ADDRESS OF SPRITE DESCRIPTOR TABLE)
       LI   R1,HELI           SPRITE
       LI   R2,32                  DESCRIPTOR
       BLWP @VMBW                        TABLE
       LI   R0,>0300     LOAD  (BASE ADDRESS OF SPRITE ATTRIBUTE TABLE)
       LI   R1,SDATA          SPRITE
       LI   R2,6                   ATTRIBUTE
       BLWP @VMBW                        TABLE
       LI   R0,>0780     LOAD  (BASE ADDRESS OF SPRITE MOTION TABLE)
       LI   R1,SPEED          SPRITE
       LI   R2,4                   MOTION
       BLWP @VMBW                        TABLE
       LI   R1,>0100
       MOVB R1,@>837A    ONE SPRITE IN MOTION
LOOP   CLR  @STATUS
       BLWP @KSCAN
       MOVB @STATUS,@STATUS HAS KEY BEEN PRESSED?
       LIMI 2            ENABLE INTERRUPTS FOR AUTO MOTION
       LIMI 0            DISABLE INTERRUPTS SO VDP IS NOT AFFECTED ON READ/WR
       JEQ  LOOP
CHECK  INC  R6           R6 IS USED AS A COUNTER TO KEEP
       CI   R6,>01E4     TRACK OF WHICH MAGNIFICATION
       JLT  GO           LEVEL (1 TO 4) WE ARE ON.
       MOV  @VDP,R6
GO     MOV  R6,R0        LOAD R0 WITH DATA TO LOAD INTO VDP R1
       BLWP @VWTR        CHANGE THE VDP REGISTER
       B    @LOOP
       END
* FOR EXTRA PRACTICE ADD A ROUTINE THAT SHOWS THE X AND Y POSITION OF THE SPRITE
* ON THE SCREEN AS IT MOVES. HINT: Y LOCATION IS 1ST BYTE IN SPRITE ATTRIBUTE
* LIST. X SECOND BYTE. READ THEM, CONVERT TO ASCII DECIMAL AND REDISPLAY WITH
* APPROPRIATE TEXT. WHO'LL BE FIRST?
```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